

What Is Claimed Is:

1. A tunable Fabry-Perot filter comprising:
a bottom mirror mounted to the top of a substrate;
5 a bottom electrode mounted to the top of said
bottom mirror;
a thin membrane support atop said bottom
electrode;
a top electrode fixed to the underside of said
10 thin membrane support;
a reinforcer fixed to the outside perimeter of
said thin membrane support; and
a confocal top mirror set atop said thin membrane
support, with an air cavity being formed between said
15 bottom mirror and said top mirror;
wherein said top electrode and said bottom
electrode are spaced further apart from one another
than said top mirror is spaced from said bottom mirror.

20 2. A tunable Fabry-Perot filter according to
claim 1 wherein said top electrode is spaced further
from said substrate than said top mirror is spaced from
said substrate.

3. A tunable Fabry-Perot filter according to claim 1 wherein the top surface of said bottom mirror is located further from said substrate than the top surface of said bottom electrode.

4. A tunable laser comprising:
a bottom mirror mounted to the top of a substrate;
a gain region mounted to the top of said bottom mirror;
a bottom electrode mounted to the top of said gain region;
a thin membrane support atop said bottom electrode;
a top electrode fixed to the underside of said thin membrane support;
a reinforcer fixed to the outside perimeter of said thin membrane support; and
a confocal top mirror set atop said thin membrane support, with an air cavity being formed between said bottom mirror and said top mirror,

wherein said top electrode and said bottom electrode are spaced further apart from one another than said top mirror is spaced from said bottom mirror.

5 5. A tunable laser according to claim 4 wherein said top electrode is spaced further from said substrate than said top mirror is spaced from said substrate.

10 6. A tunable laser according to claim 4 wherein the top surface of said bottom mirror is located further from said substrate than the top surface of said bottom electrode.

15 7. A tunable Fabry-Perot filter comprising:
a bottom mirror mounted to the top of a substrate;
a bottom electrode mounted to the top of said bottom mirror;

20 a thin membrane support atop said bottom electrode;

 a top electrode fixed to the underside of said thin membrane support;

a reinforcer fixed to the outside perimeter of
said thin membrane support; and

a confocal top mirror set atop said thin membrane
support, with an air cavity being formed between said
bottom mirror and said top mirror;

wherein said top electrode and said bottom
electrode extend toward one another.

8. A tunable Fabry-Perot filter according to
claim 7 wherein said top electrode and said bottom
electrode are interdigitated.

9. A tunable Fabry-Perot filter according to
claim 8 wherein said top electrode and said bottom
electrode comprise concentric circles.

10. A tunable Fabry-Perot filter according to
claim 8 wherein said top electrode and said bottom
electrode comprises parallel plates.

11. A tunable Fabry-Perot filter according to
claim 8 wherein said top electrode and said bottom
electrode comprise a plurality of interspaced posts.

12. A tunable laser comprising:

a bottom mirror mounted to the top of a substrate;

5 a gain region mounted to the top of said bottom mirror;

a bottom electrode mounted to the top of said gain region;

a thin membrane support atop said bottom electrode;

10 a top electrode fixed to the underside of said thin membrane support;

a reinforcer fixed to the outside perimeter of said thin membrane support; and

15 a confocal top mirror set atop said thin membrane support, with an air cavity being formed between said bottom mirror and said top mirror,

wherein said top electrode and said bottom electrode extend toward another.

20 13. A tunable VCSEL according to claim 12 wherein said top electrode and said bottom electrode are interdigitated.

14. A tunable VCSEL according to claim 13 wherein said top electrode and said bottom electrode comprise concentric circles.

5 15. A tunable VCSEL according to claim 13 wherein said top electrode and said bottom electrode comprises parallel plates.

10 16. A tunable VCSEL according to claim 13 wherein said top electrode and said bottom electrode comprise a plurality of interspaced posts.

DECLARATION AND POWER OF ATTORNEY

As a below-named inventor, I hereby declare that:

5 My residence, post office address and citizenship
are as stated below next to my name.

10 I believe I am the original, first and sole
inventor (if only one name is listed below) or an
original, first and joint inventor (if plural names are
listed below) of the subject matter which is claimed
and for which a patent is sought on the invention
entitled "TUNABLE FABRY-PEROT FILTER AND TUNABLE
VERTICAL CAVITY SURFACE EMITTING LASER", the
15 specification of which was filed on 09/28/01, accorded
Serial No. 09/966,502, and is identified by Attorney's
Docket No. CORE-84.

20 I hereby state that I have reviewed and understand
the contents of the above-identified specification,
including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).


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I hereby claim priority benefits under Title 35, United States Code, Section 120, of United States Patent Application Serial No. 09/750,434, filed 12/28/00 by Peidong Wang et al. for TUNABLE FABRY-PEROT
10 FILTER AND TUNABLE VERTICAL CAVITY SURFACE EMITTING LASER.

I hereby appoint Pandiscio & Pandiscio, a firm composed of Nicholas A. Pandiscio, Registration No. 17293, Mark J. Pandiscio, Registration No. 30883, Scott
15 R. Foster, Registration No. 20570, and James A. Sheridan, Registration No. 43,114, or any of them, of 470 Totten Pond Road, Waltham, Massachusetts 02451-1914, (Telephone No. 781-290-0060), my attorneys
20 with full power of substitution and revocation, to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith.

I hereby declare that all statements made herein
of my own knowledge are true and that all statements
made on information and belief are believed to be true;
5 and further that these statements were made with the
knowledge that willful false statements and the like so
made are punishable by fine or imprisonment, or both,
under Section 1001 of Title 18 of the United States
Code and that such willful false statements may
10 jeopardize the validity of the application or any
patent issued thereon.

Inventor's signature:

✓ 

Inventor's full name:

Peidong Wang

15 Date:

✓ 12/04/2001

Residence:

6 Dove Lane

Billerica, MA 01862

Post office address:

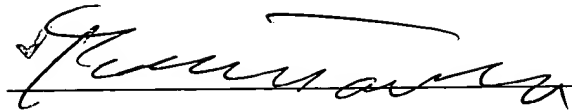
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Citizenship:

China

20

Inventor's signature:



Inventor's full name:

Parviz Tayebati

Date:

✓ 12/5/01

Residence:

2 Commonwealth Ave., 15A

5

Boston, MA 02116

Post office address:

same

Citizenship:

United States

Inventor's signature:

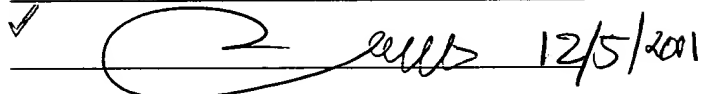
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10

Inventor's full name:

Daryoosh Vakhshoori

Date:

✓  12/5/2001

Residence:

10 Rogers Street, Apt. 205

Cambridge, MA 02142

Post office address:

same

15

Citizenship:

United States

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